CLAIMS

1. A ceramic sintered body comprising ceramic coarse particles and bonding layers existing between the ceramic coarse particles to connect the particles and including ceramic fine particles having a mean particle size smaller than that of the ceramic coarse particles.

2. A ceramic sintered body according to claim 1, wherein the ceramic coarse particles are single-crystal.

3. A ceramic sintered body according to claim 1, wherein the bonding layer is formed with ceramic fine particles having an average particle size smaller than the ceramic coarse particles, and/or a sintered body of aggregates thereof.

4. A ceramic sintered body according to claim 1 or 3, wherein the bonding layer is a brittle body having strength lower than that of the ceramic coarse particles.

5. A ceramic sintered body according to claim 3, wherein the bonding layer is a polycrystalline body comprising a plurality of ceramic fine particles.

6. A ceramic sintered body according to claim 5, wherein the ceramic fine particles are formed by sintering with the grain boundary remained.

7. A ceramic sintered body according to claim 1 or 3, wherein the bonding layer contains at least one sintering aid selected from iron, aluminium, nickel, titanium, chromium and oxide.

8. A ceramic sintered body according to claim 7, wherein a content of the sintering aid is higher than that contained in the ceramic coarse particles.

9. A ceramic sintered body according to claim 1 or 3, wherein the ceramic coarse particles and the bonding layers are formed by silicon carbide.

10. A ceramic sintered body according to claim 1 or 3, wherein a ratio of an average particle size of the ceramic coarse particle to the ceramic fine particles is 15:1 ~1 : 200.

11. A ceramic sintered body according to claim 1 or 3, wherein a ratio of total weight of the ceramic coarse particles to the ceramic fine particles is 1:1 ~1 : 9.

12. A ceramic sintered body according to claim 1, wherein the ceramic sintered body is porous.

13. A ceramic filter with a honeycomb structure comprising a pillar-shaped porous ceramic member or a combination of a plurality of the pillar-shaped porous ceramic members in which a plurality of cells as a gas passageway are arranged side by side in a longitudinal direction through cell walls and either one end portions of these cells are plugged, wherein the filter itself is formed by a ceramic sintered body comprising ceramic coarse particles and a bonding layer existing between the ceramic coarse particles to connect the particles and including ceramic fine particles having an average particle size smaller than that of the ceramic coarse particles.

14. A ceramic filter according to claim 13, wherein the ceramic coarse particles are single-crystal.

15. A ceramic filter according to claim 13, wherein the bonding layer is formed by ceramic fine particles having an average particle size smaller than that of the ceramic coarse particles, and/or a sintering body of aggregates thereof.

16. A ceramic filter according to claim 13 or 15, wherein the

bonding layer is brittle body having a strength lower than the ceramic coarse particles.

17. A ceramic filter according to claim 15, wherein the bonding layer is a polycrystalline body comprising a plurality of ceramic fine particles.

18. A ceramic filter according to claim 17, wherein the ceramic fine particles are formed by sintering with the grain boundary remained.

19. A ceramic filter according to claim 13 or 15, wherein the bonding layer contains at least one sintering aid selected from iron, aluminium, nickel, titanium, chromium, and oxide.

20. A ceramic filter according to claim 19, wherein the content of the sintering aid is higher than that contained in the ceramic coarse particles.

21. A ceramic filter according to claim 13 or 15, wherein the ceramic coarse particles and the bonding layer are formed by silicon carbide.

22. A ceramic filter according to claim 13 or 15, wherein a ratio of an average particle size of the ceramic coarse particles to the ceramic fine particles is 15:1 ~1 : 200.

23. A ceramic filter according to claim 13 or 15, wherein a ratio of total weight of the ceramic coarse particles to the ceramic fine particles is 1:1 ~1 : 9.

24. A ceramic filter according to claim 13, wherein the ceramic sintered body is porous.